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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEE, SHUN K	

ART UNIT	PAPER NUMBER
2884	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/744,148	ELSTEIN ET AL.	
	Examiner	Art Unit	
	Shun Lee	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2006 and 09 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,8-51,53-57 and 59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,8-51,53-57 and 59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3 March 2006 has been entered.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 36, 38, 40, 42, 44, 46, 48, 50, and 53-57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 36, 38, 40, 42, 44, 46, 48, 50, and 53-57 provide for the use of two separate imaging units, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass.

A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 36, 38, 40, 42, 44, 46, 48, 50, and 53-57 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-3, 6, 8-20, 22, 24, 27, 35, 38-43, 46, 47, and 54-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross *et al.* (US 3,748,471) in view of Dirscherl *et al.* (US 5,001,348).

In regard to claims **8-20**, **24**, **39**, **41**, **43**, and **47** Ross *et al.* disclose (Figs. 4 and 5) an apparatus for detecting, locating and visualizing in real time non-visible emittance in an environment illuminated by at least one of daytime outdoor illumination and equivalent artificial indoor illumination, comprising:

(a) image acquiring means with two separate imaging units (50, 90, 52, 54, 106), for acquiring through a same aperture of the apparatus and along a common optical axis an image of a scene, the image spanning at least a visible spectrum and a non-visible spectrum, and image acquiring elements such as beamsplitters (62, 64, 102) and optical lenses (*i.e.*, input lenses; column 4, lines 64-68) for simultaneously providing a first image from the scene into a non-visible imaging unit, and a second image from the scene into a visible imaging unit;

(b) said non-visible imaging unit (50, 90) comprising: (b1) passive optical elements such as optical lenses (*i.e.*, input lenses; column 4, lines 64-68); (b2) passive optical elements such as a non-visible optical filter (70, 92) allowing transmittance of optical radiation in a non-visible spectrum range only, and absorbing optical radiation in all other spectral regions (column 5, lines 1-9); (b3) non-visible image

providing means comprising a non-visible image sensor for receiving the optical radiation in the non-visible spectral range only, passed through said non-visible optical filter, and producing a first visual image, being a non-visible spectrum UV image;

(c) said visible imaging unit (52 and 54 or passive optical element 106) receiving said second image of the scene from the image acquiring means, and producing a second visible image, representing visible background scenery of the scene; and

(d) combining means (76, 55, beamsplitter 110) for receiving the first visual image from the non-visible imaging unit and the second visible image from the visible imaging unit, and combining in real time by overlaying said first visual image over said second visible image thereby producing one combined and exactly registered visual image showing in real time the non-visible emittance in its exact position within the background scenery with no parallax.

The apparatus of Ross *et al.* lacks an explicit description that the beamsplitter is a dichroic beamsplitter and the non-visible imaging unit comprises a solar blind ultraviolet optical filter absorbing optical radiation in all other spectral regions while passing optical radiation in a solar blind UV spectrum range only through a first lens to an image plane at which a SBUV image sensor is located, wherein the SBUV image sensor comprises a fluorescent screen, an UV solar blind image intensifier, or a CCD and the visible image unit comprises a CCD. However, imaging units are well known in the art. For example, Dirscherl *et al.* teach (column 5, line 60 to column 6, line 59; column 11, lines 1-45) to provide ultraviolet optics (1 in Fig. 1) and an UV solar blind image intensifier comprising

suitable filters, photocathode, image amplifier, fluorescent screen, and CCD, in order to detect the self- or characteristic-emission of a flying body exhaust gas stream in the ultraviolet spectral range with sensor devices which are blind to artificial and solar UV (column 2, lines 17-26) and to unambiguously locate and recognize an object. Dirscherl *et al.* further teach (column 11, lines 46-58) to coat surfaces of optical elements with selective filter layers, in order to evaluate a desired spectral range. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a known beamsplitter (*e.g.*, dichroic beamsplitter) as the beamsplitter and a known UV imaging unit (*e.g.*, an UV photocathode in combination with a suitable solar blind filter) as the non-visible imaging unit in the apparatus of Ross *et al.*, in order to detect the self- or characteristic-emission of a flying body exhaust gas stream in the ultraviolet spectral range with sensor devices which are blind to artificial and solar UV.

Applicant is advised that should claim 8 be found allowable, claims 37, 39, 41, 43, 45, 47, 49, and 51 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). It should be noted that dependent claims 37, 39, 41, 43, 45, 47, 49, and 51 are directed to an apparatus. The intended uses of the apparatus (*e.g.*, "the UV emittance is caused by electrical discharge" as recited in claim 37; "the UV emittance is emittance caused by combustion" as recited in claim 39;

"for locating and tracking objects which are provided with a light source emitting UV radiation" as recited in claim 41; "for imaging and monitoring phenomena that produce UV emission" as recited in claim 43; "for visual imaging of reflections from objects illuminated by UV light sources" as recited in claim 49) are of no significance in determining patentability of an apparatus claim (MPEP § 2115). Further, the intended use of the apparatus does not imply any structure and thus dependent apparatus claims 37, 39, 41, 43, 45, 47, 49, and 51 are duplicates of apparatus claim 8.

In regard to claims **1**, **2**, **6**, **38**, **40**, **42**, and **46**, Ross *et al.* in view of Dirscherl *et al.* is applied as in claims 8-20, 24, 39, 41, 43, and 47 above.

In regard to claims **35** and **54-56**, Ross *et al.* in view of Dirscherl *et al.* is applied as in claims 1, 6, 38, 40, 42, and 46 above. The method of Ross *et al.* lacks two different non-visible imaging units. Dirscherl *et al.* teach (column 11, lines 1-45) to detect multiple spectral ranges such as UV, VIS, and IR, in order to unambiguously locate and recognize an object. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide two different non-visible imaging units (*e.g.*, an IR imaging unit and an SBUV imaging unit) in the method of Ross *et al.*, in order to unambiguously locate and recognize an object.

In regard to claim **3** (which is dependent on claim 1) and claim **22** (which is dependent on claim 8), Ross *et al.* also disclose (Figs. 4 and 5) transferring the combined visual image into electronic recording and/or displaying means (*e.g.*, 78) for recording and/or displaying the combined visual image.

In regard to claim **27** which is dependent on claim 8, Ross *et al.* also disclose (Figs. 4 and 5) a stills camera means (78) for recording the combined visual image on a stills camera film (column 5, lines 28-31).

11. Claims 4, 21, 23, 28-34, 36, 37, 48-51, 53, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross *et al.* (US 3,748,471) in view of Dirscherl *et al.* (US 5,001,348) as applied to claims 3, 8, 22, and 35 above, and further in view of Applicant's Admitted Prior Art.

In regard to claim **4** (which is dependent on claim 3) and claim **23** (which is dependent on claim 22), the modified apparatus and method of Ross *et al.* lacks that the electronic recording and/or displaying means is a videotape. However, videotapes are well known in the art. For example, applicant admits (last paragraph on pg. 34 and third paragraph on pg. 39) as Prior Art that standard video equipment such as videotapes are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known videotapes in the modified apparatus and method of Ross *et al.*, in order to obtain a record of the combined visual image.

In regard to claim **21** which is dependent on claim 8, the modified apparatus of Ross *et al.* lacks that the combined visual image is obtained by at least one of arithmetic mixing, non-arithmetic mixing, luminance keying and chroma keying, for combining first and second electronic signals representing the first and second visible images, respectively. However, a combined visual image obtained by arithmetic mixing, non-arithmetic mixing, luminance keying or chroma keying is well known in the art. For

example, applicant admits (last two paragraphs on pg. 23) as Prior Art that a combined visual image obtained by arithmetic mixing, non-arithmetic mixing, luminance keying or chroma keying is well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known means of arithmetic mixing, non-arithmetic mixing, luminance keying or chroma keying in the modified apparatus of Ross *et al.*, in order to obtain a combined visual image.

In regard to claims **28** and **29** which are dependent on claim 21, the modified apparatus of Ross *et al.* lacks an explicit description of a digital processing unit for processing at least one of the first and second electronic signals, for at least one of improving the contrast between the image of the UV emittance and the background scenery in the combined visual image, for the elimination of noise, the identification of UV emitters in the scene, and the capture of transient UV events in the scene. Dirscherl *et al.* teach (column 5, lines 20-27) a digital processing unit for processing at least one of the first and second electronic signals, for at least one of improving the contrast between the image of the UV emittance and the background scenery in the combined visual image, for the elimination of noise, the identification of UV emitters in the scene, and the capture of transient UV events in the scene. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a digital processing unit in the modified apparatus of Ross *et al.*, in order to improve the contrast between the image of the UV emittance and the background scenery in the combined visual image, to eliminate noise, to identify UV emitters in the scene, and/or to capture transient UV events in the scene.

In regard to claim **30** which is dependent on claim 28, the modified apparatus of Ross *et al.* lacks that the processing unit is an analog processing unit. However, image processing units are well known in the art. For example, applicant admits (last two paragraphs on pg. 23) as Prior Art that analog processing units for image processing are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known image processing means (*e.g.*, analog processing units) in the modified apparatus of Ross *et al.*, in order to process a combined visual image.

In regard to claims **31-34** which are dependent on claim 28, the modified apparatus of Ross *et al.* lacks means for providing an alarm or means for initiating action (*e.g.*, initiation of fire extinguishing means or documentation of UV emitting events) as to the detection of SBUV emittance which is above a predefined threshold level. However, means for providing an alarm or initiating action are well known in the art. For example, applicant admits (last paragraph on pg. 28) as Prior Art that means for providing an alert or initiating action are well known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide well known means providing an alarm or initiating action in the modified apparatus of Ross *et al.*, in order to indicate or initiate corrective measures.

In regard to claim **36** (which is dependent on claim 1), claim **37** (which is dependent on claim 8), and claim **53** (which is dependent on claim 35), the modified apparatus and method of Ross *et al.* lacks an explicit description that it is used for imaging UV emittance caused by electrical discharge. However, UV emitting

phenomena such as caused by electrical discharges are well known in the art. For example, applicant admits (last paragraph on pg. 4) as Prior Art that it is well known in the art to obtain images of electrical discharges for the early detection of electrical leakages. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the modified apparatus and method of Ross *et al.* for multi-spectral imaging of electrical discharges, in order to detect electrical leakages.

In regard to claims **48** and **50** (which are dependent on claim 1), claims **49** and **51** (which are dependent on claim 8), and claim **57** (which is dependent on claim 35), the modified apparatus and method of Ross *et al.* lacks an explicit description that it is used for imaging of the reflections from objects (*e.g.*, finger prints or fluid stains) illuminated by UV light sources. However, imaging of the reflections from objects (*e.g.*, finger prints or fluid stains) illuminated by UV light sources is well known in the art. For example, applicant admits (first paragraph on pg. 6) as Prior Art that it is well known in the art to obtain images of the reflections from objects (*e.g.*, finger prints or fluid stains which are invisible to the naked eye) illuminated by UV light sources. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the modified apparatus and method of Ross *et al.* for multi-spectral imaging of UV illuminated objects, in order to detect objects (*e.g.*, finger prints or fluid stains) which are invisible to the naked eye.

12. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross *et al.* (US 3,748,471) in view of Dirscherl *et al.* (US 5,001,348) as applied to claim 24 above, and further in view of Baril *et al.* (US 5,535,053).

In regard to claims **25** and **26** which are dependent on claim 24, the modified apparatus of Ross *et al.* lacks that the modified apparatus in a monocular or binocular form. Baril *et al.* teach (column 1, lines 16-65) to provide a monocular or binocular display, wherein each display type have advantages for different applications. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a monocular or binocular display in the modified apparatus of Ross *et al.*, in order to obtain a display adapted for a desired application.

13. Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross *et al.* (US 3,748,471) in view of Dirscherl *et al.* (US 5,001,348) as applied to claims 42 and 43 above, and further in view of Hartemann *et al.* (US 4,835,391).

In regard to claim **44** (which is dependent on claim 42) and claim **45** (which is dependent on claim 43), the modified apparatus and method of Ross *et al.* lacks an explicit description that it is used for imaging Cherenkov radiation. However, UV emitting phenomena such as Cherenkov radiation are well known in the art. For example, Hartemann *et al.* teach (column 1, lines 11-59) it is well known in the art to obtain images of Cherenkov radiation for the study of beam dynamics. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the modified apparatus and method of Ross *et al.* for multi-spectral imaging of Cherenkov radiation, in order to study beam dynamics.

14. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ross *et al.* (US 3,748,471) in view of Dirscherl *et al.* (US 5,001,348) as applied to claim 8 above, and further in view of Willey (US 5,841,574).

In regard to claim **59** which is dependent on claim 8, the modified apparatus of Ross *et al.* lacks that the image acquiring means comprises an optical lens which acquires SBUV and visible light beams from said common optical axis and transmits the SBUV light beams spanning the UV image towards the SBUV imaging unit, and a mirror in front of a central portion of said lens, for reflecting light in the visible spectrum towards the visible imaging unit. However, catadioptric-type optical system are well known in the art. For example, Willey teaches (column 1, lines 7-25) to provide a catadioptric-type optical system for remote sensing and spectroscopy applications performed from satellites or spacecraft orbiting the Earth. Ross *et al.* also disclose (column 4, lines 3-9) viewing a forest from an aerial vantage point. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a catadioptric-type optical system in the modified apparatus of Ross *et al.*, in order to view a forest from an aerial vantage point.

Response to Amendment

15. The declaration under 37 CFR 1.132 filed 9 May 2006 is sufficient to overcome the rejection of claims based upon Willey (US 5,841,574) in view of Dirscherl *et al.* (US 5,001,348) under 35 U.S.C. 103(a).

Response to Arguments

16. Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 5,555,324 (Waxman *et al.*) discloses real time image fusion (column 11, lines 1-9). US Patent 5,790,188 (Sun) discloses airborne remote sensing data acquisition using commercially available video digitization cards that convert the input from 3 CCDs into a composite video signal suitable for display during data collection and/or recording on a S-VHS recorder (column 7, line 44 to column 9, line 65).

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL

CONSTANTINE HANNAHER
PRIMARY EXAMINER